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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/652,090	08/31/2000	Haruo Kodama	9369-51US(T37-124467M/TH)	2837

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EXAMINER

LOPEZ, FRANK D

ART UNIT	PAPER NUMBER
3745	

DATE MAILED: 11/15/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	09/652,090	KODAMA ET AL.	

Examiner	Art Unit	
F. Daniel Lopez	3745	

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 19 August 2002.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-36 is/are pending in the application.

4a) Of the above claim(s) 6-36 is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-5 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.

2. Certified copies of the priority documents have been received in Application No. _____.

3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.

4) Interview Summary (PTO-413) Paper No(s) _____.

5) Notice of Informal Patent Application (PTO-152)

6) Other: _____.

Response to Amendment

Applicant's arguments filed August 19, 2002, have been fully considered but they are not deemed to be persuasive.

Applicant's arguments with respect to claims 1-5 have been considered but are moot in view of the new ground(s) of rejection. The new grounds of rejection are necessitated by applicant's arguments concerning the operation position inputting means and operation position signal outputting means (see discussion below).

Applicant states that "the specification teaches a control unit 23B that operates to control the pressure supplied from hydraulic pump to be higher than the pressure required to drive a hydraulic motor by a predetermined amount" (page 8 line 1-3), and argues "From this disclosure, one skilled in the art...would understand that the current supplied to the electromagnetic relief valve 46 (signal 36) is related to the pressure of the supply pressure (the pressure measured at pressure gage 49...), the pressure at the hydraulic motor 43...and the predetermined pressure" (page 8 line 8-13).

In view of the figures, there appears to be a discrepancy between the first statement and the argument. The figures show a pressure relief valve 45 which is biased closed by a pilot pressure in a pilot line (67) generated by the electromagnetic relief valve 46, and by a spring pressure; and biased ^{open} ~~closed~~ by the supply pressure (not numbered). The pressure relief valve sets the supply pressure to be a value where the supply pressure minus (the pilot pressure plus the spring pressure) is equal to zero, i.e.:

$$P_{\text{supply}} - P_{\text{pilot}} - P_{\text{spring}} = 0.$$

Applicant's first statement states that the supply pressure is equal to the work pressure (pressure required to drive the motor) plus the predetermined pressure, i.e.

$$P_{\text{supply}} = P_{\text{work}} + P_{\text{predetermined}}.$$

Combining the above two equations result in $P_{\text{pilot}} = P_{\text{work}} + P_{\text{predetermined}} - P_{\text{spring}}$. Clearly, based on the first statement, the supply pressure is not needed if the predetermined pressure is available. Therefore, the statement and the argument contradict each other.

TB

Applicant argues that Ikebe et al does not disclose a number of elements, including the following:

operational position inputting means not corresponding with element 401, since the disclosed manually operated lever does not correspond with a computer which produces a pulsed signal, as the two elements are different structures performing different functions;

operation position outputting means not corresponding with element 402, since the input of the disclosed operation position outputting means (i.e. physical position of the lever) is not the same as the input (pulse train F) to the element 402, even though they both have the same function of providing an electrical signal to the motor drive circuit; or that the pressure detectors 116, 117 are not supplying oil pressure detecting means.

The first question is what constitutes the numerical control unit 401. One of ordinary skill in the electro-hydraulic pulse motor art would recognize that the numerical control unit must include or be connected to some kind of manually operated control element. The control element can be as simple as an on-off switch to start a pre-programmed series of pulses; as elaborate as a keyboard connected to a separate computer, to generate a particular path; or a lever to generate instantaneous desired positions; all of which would be considered equivalent in the electro-hydraulic pulse motor art. Therefore, element 401 inherently includes or is connected to the operational position inputting means.

In view of applicant's discussion of the operation position outputting means, it is clear that element 402 is not the main part of the operation position outputting means. It is equally clear that the operation position outputting means would inherently be part of and/or connected to the control unit 401, since there must be an element connected to and/or part of the control unit 401, which accepts the physical signal from the operation position inputting means and from it generates the appropriate output signal. Note that other parts of the control unit 401 and the converter 402 can be considered either part of the operation position outputting means or part of the drive signal outputting means.

Neither of the pressure sensors 116, 117 were considered supply pressure sensors. They are the work pressure sensors, as claimed in claim 3. There is no supply pressure sensor in Ikebe et al. The 112 first paragraph rejection essentially considers the supply pressure sensor as not having any use; since it is disclosed only to be used to generate the current for the electromagnetic relief valve 46, but is not needed for this purpose (see discussion above and rejection below). Unless the supply pressure sensor is shown to be used for generating the current for the electromagnetic relief valve 46, the only way to make the claims overcome the 112 first paragraph is to eliminate the supply pressure sensor.

Applicant argues that Dantlgraber does not show an electromagnetic relief valve, or that there is any motivation to combine Dantlgraber with Ikebe et al. Applicant is mistaken on both issues. The symbol used for the valve 20 is that of an electromagnetic relief valve, and figure 3 clearly shows that it is variable. Furthermore, figure 2 shows that the pump pressure (P_P) changes as the control pressure (P_{ST}) is changed, and the valve 20 is what changes the control pressure (see also column 3 line 5-7). Therefore, the valve 20 is an electromagnetic relief valve.

Since Ikebe et al does not show details of the pressure supply unit, and Dantlgraber does, the first motivation is simply to fill in the details. A further motivation to use Dantlgraber is to decrease an amount of energy used to drive the pump.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 112

Claims 1-5 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention and/or in such a way as

to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 1 line 45-54 claims "oil pressure control means for receiving the supplying-oil pressure signal output...and the drive oil pressure signal...and outputting a current to the electromagnetic relief valve and thus the set pressure of the main relief valve, thereby controlling the pressure of the working oil supplied from the working oil supplying means to be higher, by a predetermined pressure, than the pressure of the working oil for driving and rotating the drive rotary member". Page 52 line 5-8 states "A pressure of the working oil supplied from the hydraulic pump 42 to the directional control valve 25 is controlled to be higher than the pressure of the working oil for driving and rotating the hydraulic motor 43 by a maximum pressure of 20 kg/cm²"; and page 53 line 11- page 54 line 3 states "When the pressure control circuit 23B varies the current...to the electromagnetic relief valve 46, a set pressure of the electromagnetic relief valve 46 varies since the set pressure...is determined by the current input thereto. Since the pressure of the pilot oil in the pilot oil passage 67 is equal to the set pressure in the electromagnetic relief valve 46, the pressure of the pilot oil also varies with variation of the set pressure of the electromagnetic relief valve 46. The set pressure of the main relief valve 45 is determined by the pressure of the pilot oil...Further, the main relief valve controls the pressure of the working oil that is supplied from the hydraulic pump 42...to be the set pressure or lower."

Clearly, the above claim and discussion indicates that the pressure difference between the pressure supplied by the pump and the pressure of the working oil is a maximum of 20 kg/cm². Since the main relief valve 45 is moved to an open position by the pressure supplied by the pump and moved toward a closed position by pressure in pilot line 67 and by the spring; to achieve this pressure difference, the pressure in the pilot line plus a pressure corresponding to the spring must be equal to the working pressure plus the 20 kg/cm². Since the pressure in the pilot line 67 is only a function of the working pressure, the current sent to the electromagnetic relief valve 46 is only a function of the working pressure, and therefore it is unclear why the supply pressure is

sent to the control unit 23B, and how the supply pressure is used to generate the current for the electromagnetic relief valve 46.

If the supply pressure is not used to determine the current for the electromagnetic relief valve 46, as appears evident from the above discussion, then the disclosure is confusing, for indicating that the supply pressure is used to determine the current. Otherwise, if the supply pressure is used to determine the current for the electromagnetic relief valve 46, the specification is not enabling to one of ordinary skill in this art, since the relationship between the working and supply pressures and the current is not specified.

Claim Rejections - 35 USC § 103

Claims 1 and 3, inasmuch as they are definite (see 112 first paragraph above), are rejected under 35 U.S.C. § 103 as being unpatentable over Ikebe et al in view of Dantlgraber. Ikebe et al discloses a hydraulic drive apparatus comprising a working oil supplying means (112) for supplying working oil to drive and rotate a drive rotary member (111); rotation control means, for controlling a quantity of working oil supplied from the supplying means to the rotary member, which includes operation-position inputting means (part of and/or connected to 401) for inputting an operation position, operation-position signal outputting means (part of and/or connected to 401) for generating and outputting an operation position signal depending on the operation position input, drive signal outputting means (407) for computing and converting the operation signal output into a drive signal, an electric motor (101) driven and rotated at a speed and quantity of rotation depending on the drive signal, and working oil control means (102) for controlling a quantity of working oil supplied from the supplying means to the drive rotary member so that the rotary member is driven and rotated depending on rotation of the electric motor; drive oil pressure detecting means, including a pressure sensor (one of 116 or 117) for detecting pressure of working oil supplied from the working oil control means to the rotary member and another pressure sensor (other of 116 or 117) for detecting pressure of working oil supplied from the rotary member to the working oil control means; but does not disclose that the supplying means includes

a main relief valve for regulating a pressure of the working oil supplied from the supplying means to be equal or lower than a set pressure, an electromagnetic relief valve for varying the set pressure of the main relief valve and oil pressure control means for receiving the drive oil pressure signal from the drive oil pressure detecting means and outputting a current to the electromagnetic relief valve to vary the set pressure of the main relief valve, thereby controlling the pressure of the oil supplied by the supplying means to be higher, by a predetermined pressure, than the pressure of the working oil of the rotary member.

Dantlgraber teaches, for a supplying means supplying pressurized working oil to a hydraulic motor; that the supplying means includes a variable displacement pump, a main relief valve (130) for regulating a pressure of the working oil supplied from the pump to be equal or lower than a set pressure, an electromagnetic relief valve (20) for varying the set pressure of the main relief valve and oil pressure control means for outputting a current to the electromagnetic relief valve to vary the set pressure of the main relief valve, thereby controlling the pressure of the oil supplied by the pump, for the purpose of conserving energy needed to drive the pump.

Official notice is taken, for a variable displacement pump delivering pressurized oil to a hydraulic motor at a pressure regulated to be equal or lower than a set pressure, that the set pressure is a predetermined pressure above a load pressure of the motor, for the purpose of having sufficient pressure to drive the motor without wasting energy.

Since Ikebe et al and Dantlgraber are both from the same field of endeavor, the purpose disclosed by Dantlgraber would have been recognized in the pertinent art of Ikebe et al. It would have been obvious at the time the invention was made to one having ordinary skill in the art to include a variable displacement pump, a main relief valve for regulating a pressure of the working oil supplied from the pump to be equal or lower than a set pressure, an electromagnetic relief valve for varying the set pressure of the main relief valve and oil pressure control means for outputting a current to the electromagnetic relief valve to vary the set pressure of the main relief valve, thereby controlling the pressure of the oil supplied by the pump as part of the supplying means of Ikebe et al, as taught by Dantlgraber, for the purpose of conserving energy needed to

drive the pump; with the set pressure being a predetermined pressure above a load pressure of the motor, for the purpose of having sufficient pressure to drive the motor without wasting energy.

Conclusion

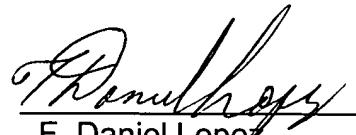
Claims 2, 4 and 5 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. § 112, first and second paragraph, set forth in this Office action.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dan Lopez whose telephone number is (703) 308-0008. The examiner can normally be reached on Monday-Thursday from 6:30 AM -4:00 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Look, can be reached on (703) 308-1044. The fax number for this group is (703) 872-9302. Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0861.



F. Daniel Lopez
Primary Examiner
Art Unit 3745
November 13, 2002